

Remarks

Favorable reconsideration of this application is requested in view of the above amendments and following remarks.

Claims 2, 4, 10-12 and 18 have been rejected under 35 U.S.C. § 112, second paragraph as being indefinite. Favorable reconsideration of this rejection is requested. Editorial revisions have been made in the claims in response to the constructive criticisms noted in the rejection. Claims 15 and 16 have been amended to better define the invention. No new matter is added as a result of these amendments.

Applicants respectfully traverse the Examiner's rejection of claims 3, 4, 15, 16 and 17 under 35 U.S.C. § 102(b) as being anticipated by JP 5 220 403 A. Applicants also respectfully traverse the rejection of claims 2-5, 10 and 15-17 as being unpatentable over this reference.

This reference describes a zeolite catalyst. The reference indicates that a number of different metals could be carried by the catalyst if desired. The sole metal used in the examples in the reference is copper.

In contrast, the present invention is directed specifically to the use of cobalt in the catalyst. The present invention provides catalysts that show durable performance even in the presence of water vapor. As shown in Example 11 (and corresponding Figure 1) of the present specification, Co-BEA exhibits a NO_x conversion rate of 60% after 2,000 hours whereas Co-MFI exhibits a substantial activity reduction after about 100 hours and a 30% conversion rate after only 400 hours. This phenomenon is unique to cobalt, as clearly described in Comparative Example 9 (and related Figure 3).

Further support for this position is provided by the accompanying Declaration of Mr. Tabata. The Declaration describes experiments conducted for Cu- and Ni- carrying catalysts, and evaluates initial performance and performance after exposure to gas containing water vapor. It can be seen from the results reported in the Declaration that the catalyst containing copper suffered significant deterioration in performance upon exposure to water vapor. The catalyst containing nickel, which is included in the reference's list of useful metals, was significantly inferior even to the copper catalyst.

One of ordinary skill considering the teachings of the '403 reference when considered as a whole would conclude, at best, that the selection of the metal is not of particular significance. If

anything, the use of copper as the sole metal in the examples in the reference would suggest that copper would be the most useful metal. There is no teaching in the reference that would lead one of ordinary skill to the use of cobalt over the other metals listed. Likewise there would be no reason whatsoever for one of ordinary skill to expect that the advantageous improvements in durability upon exposure to water vapor could be achieved through the use of cobalt instead of copper and the other listed metals. However, in the present invention the selection of the metal is of great significance, as demonstrated by the results reported in the specification and Mr. Tabata's Declaration. Therefore, the present invention is neither disclosed nor even suggested by the reference.

Applicants respectfully traverse the Examiner's rejection of claims 3, 15 and 16 under 35 U.S.C. § 102(b) as being anticipated by Tamura et al., GB 2 238 784 A.

Tamura et al. disclose NO_x reduction using a ferrierite carrying cobalt as a catalyst and propane as a reducing agent. Ferrierite has straight channels of 8-ring and 10-ring having two dimensional directions. The present claims require the presence of 10-ring channels. Tamura et al. fail to anticipate the claimed invention.

Applicants respectfully traverse the Examiner's rejection of claims 3, 15 and 16 under 35 U.S.C. § 103(a) as being unpatentable over Tamura et al., GB 2 238 784 A.

As noted above, Tamura et al. fail to anticipate the claimed invention. The rejection asserts that while the reference fails to disclose certain claimed limitations, said limitations would be obvious to one of skill in the art. Applicants respectfully disagree, as Tamura et al. fail to teach a cobalt loaded zeolite catalyst with particular structure requirements. The cited reference mentions the possible use of cobalt along with many other metals. Further, Tamura et al. are directed to a hydrogenated catalyst which does not even require a metal. The cobalt is optional.

In addition, Table 2 on page 12 discloses that cobalt loaded catalysts are less than optimal. Instead, copper loaded catalysts are shown to out-perform cobalt. This teaches away from the claimed invention. Further, the cited reference fails to disclose high durability even in the presence of water vapor. Thus, the present invention provides an advantage that could not have been expected from the reference's disclosure.

In view of the above, favorable reconsideration in the form of a Notice of Allowance is requested.

Respectfully submitted,

Takeshi TABATA, et al.,

By their attorney(s),

MERCHANT, GOULD, SMITH, EDELL,
WELTER & SCHMIDT, P.A.

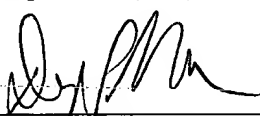
3100 Norwest Center

90 South Seventh Street

Minneapolis, Minnesota 55402

Telephone: (612) 332-5300

December 15, 1998
Date



Douglas P. Mueller

Reg. No. 30,300

DPM:KCH